MONTHLY JOURNAL OF
THE MUSHROOM GROWERS'
ASSOCIATION

MGA
BULLETIN

MARCH, 1955 · NUMBER 63

CONTENTS

	Page
Editorial : To be or not to be?	511
Enquiry into Horticultural Marketing	512
"Utterly Irresponsible" Broadcast	512
New Committee Members	513
Death of Dr. W. M. Ware, MGA's First Hon. Life Member	514
PUBLICITY WHERE IT COUNTS	515
Mushroom Growing In Japan : Kazuo Kinoshita	516
The Fred. Atkins Alphabet—P	517
PUBLICITY Position to date	518
I HAVE BEEN ASKED : Dr. R. L. Edwards	519
PRICE TRENDS : Fred. C. Atkins	521
FINANCE OF MUSHROOM HOLDINGS	523
An American Grower's Diary : Jos. M. Michaels	526
PUBLICITY—New Contributors	528
Publicity Contributions List	529
DOWN TO EARTH : Dr. R. L. Edwards	530
My Way of Growing—18 : W. J. Gowland	532
Correspondence	533

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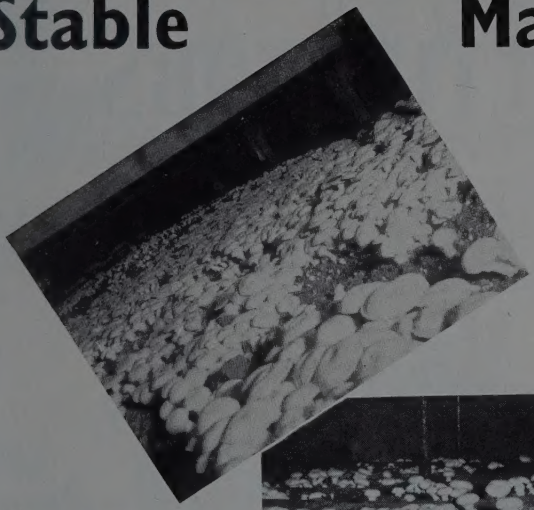

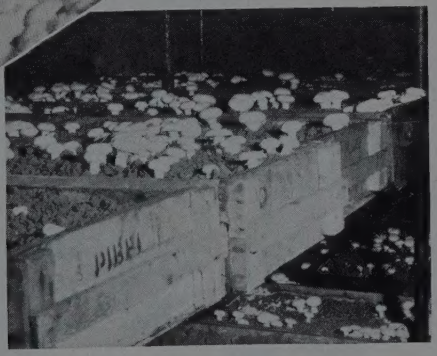

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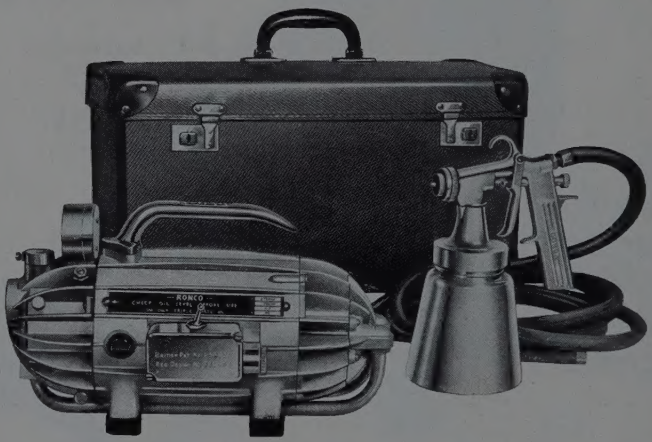

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NUMBER 63

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EDITORIAL

TO BE *or* NOT TO BE . . . ?

Elsewhere in this issue will be seen a contribution which deals, pretty fully, with the lack of outside financial investment in the Mushroom Industry of this country. In this the Industry shares a problem with the Agricultural Industry as a whole as, for some years now, economic experts have been underlining the fact that, to have an efficient agricultural industry, the necessary finance to bring about improvements and modernisations must be available, either through private sources or by way of an official backing.

The Mushroom Industry and this lack of finance have always gone hand in hand, mainly because the mushroom has for a great many years carried with it the idea of easy financial reward with the result that, in some most notable cases, money invested in a mushroom production concern has vanished into thin air, the luckless investors concerned whistling in vain. Indeed, a particularly large mushroom farm in Essex, which attracted much public money some twenty or twenty-five years ago, came crashing down and in doing so not only encompassed the near ruin of many associated with it, but brought considerable discredit to the industry at large. As our contributor points out, those who deal in matters of finance have, of necessity, long memories and the purse strings of the investor remain tightly tied against those who would venture to grow mushrooms.

Whether this lack of finance and the inevitable strangulation of expansion is in the long term interests of the Industry is a matter for the Industry itself to decide but it is a decision which the Industry should take without delay rather than perpetually pushing it into the background.

Certain it is that readily available finance would be quickly taken up and it is fair to assume that costs of production, even allowing for interest on the extra invested capital, would be reduced. On the other hand without a considerably expanded demand, increased production can only result in lower market prices and, goodness knows, prices are low enough already.

One certainty is that, for any prosperous industry, demand and expansion must go hand in hand. If there is any lagging then it must be on the production side whilst the present lack of finance exists. If finance was readily available then the industry could put itself into a position where it could meet the demand which would most certainly come from the stabilisation of cultivated mushrooms at a retail price of 4/- to 5/- per lb. all the year round.

Members are urged to make a thorough study of the article already mentioned. It is written by someone with experience of the financial world who, as far as this industry is concerned, is on the outside, looking in. W.R.A.

INQUIRY INTO HORTICULTURAL MARKETING

In reply to a question in the House of Commons on 3rd February, the Minister of Agriculture and Fisheries, the Rt. Hon. D. Heathcoat Amory, M.P., announced that Viscount Runciman had accepted his invitation to act as Chairman of the Committee of Inquiry into Horticultural Marketing which the Government had decided to set up.

The Committee's terms of reference will be:—

> "To investigate the present facilities for and methods of marketing home-produced and imported vegetables, fruit and flowers; to consider whether the marketing and distribution of such produce can be improved; and to make recommendations."

The Minister said that he would announce the names of the other members of the Committee as soon as possible.

The Parliamentary Secretary (Lords), Earl St. Aldwyn, made a similar announcement in the House of Lords.

BROADCAST BRANDED AS "UTTERLY IRRESPONSIBLE"

In a broadcast in the B.B.C.'s "Farming To-day" series on 15th February, a horticultural journalist, Mr. P. J. Lobjoit, said that retailers' profit margin for potatoes was 50 per cent. and never under 100 per cent. for equally non-perishable root crops.

He said, "In my opinion there seems to be no valid reason why such a large margin of uncontrolled profits should be allowed to those retailing fruit and vegetables. The prices reflect seasonal trends only and never allow the public to benefit from natural gluts. The retailer, I know, argues that his loss from wastage is very high. But with mushrooms the loss in weight due to drying up alone is far higher than for any other crop. Yet the margin of profit here is generally less than 50 per cent."

According to the "Fruit Trades Journal," from which the above was taken, Mr. T. D. Makin, M.B.E., National Secretary of the Retail Fruit Trade Federation, afterwards described the broadcast as "utterly irresponsible" and went on to prove, with figures, that the retailers' profit on Edward potatoes, at the controlled wholesale price of 17s. 3d. per cwt. was about 1s. 4d.

NEW COMMITTEE MEMBERS

A. CAMPBELL MELVILLE, the most recent member of the MGA Executive Committee, is the new Scottish representative. Aged 49, he is married and has two children. He is a comparative newcomer to the mushroom industry, commencing in 1948. Educated at Dundee High School, he afterwards joined his father in agriculture, managing three farms, principally in dairying and the raising of a first-class Pedigree Herd of British Friesians in Scotland. He was a pioneer in the early days in experimenting on the eradication of Tuberculosis in Cattle, and worked in close co-operation with the Pasteur Institute in London. During the war, he flew as a Flight/Lieut., prior to which he achieved his Pilot's "A" Certificate as a hobby. Mr. Melville is a keen tray grower and has converted farm buildings into an extremely compact plant in the fertile Carse of Gowrie between Dundee and Perth. He has travelled extensively on the Continent in connection with Dairying and Agriculture. He believes strongly in the Publicity of Mushrooms and contends that it is a positive "**must**" for future existence.

ERIC A. GOOK was born in 1911, and spent much of his early life in ICEland (Not Ireland). In the early 30's he settled in London having trained as an Estate Agent. He first became interested in mushrooms in 1928, when as a lad he watched neighbours invest a legacy in a mushroom bed. "They lost every penny," he says, and I well remember thinking I could do much better —such is the conceit of youth." In the spring of 1940, volunteered for the Army and was sent by Intelligence back to Iceland. Later he was commissioned in the Intelligence Corps and rose to the rank of Captain. He went from Iceland to Africa in 1943, where he remained until demobilisation.

On demobilisation he invested all he could in his present farm and joined the MGA. (One of the early members). "Thanks to my friend Mr. G. V. Allen, the MGA, a lot of work and my share of luck, I have no regrets and I wouldn't swop my job with anyone," he says, adding that his farm is still being developed, and output at the moment is some 60,000 lb. per annum. He is married and has one son.

GUY V. REED—After leaving Kings' School, Canterbury, he spent the earlier part of his business life in advertising in U.S.A. Formed partnership of Lupton, Reed & Co. Inc., New York Advertising Agency. Returning to England in 1935, he was appointed Advertising and Sales Promotion Manager of the Selfridge Group of Stores until the War. He devoted part time to helping organize Ministry of Economic Warfare just before war began, and was in Enemy Intelligence work most of the duration. He was sent on several official missions to U.S.A., holding diplomatic rank at H.M. Embassy in Washington. At War's end he was appointed in charge of Press and Public relations at Department of Overseas Trade with headquarters at Board of Trade. Retiring from City work in 1947, to build up business in the country, Mr. Reed began mushroom growing on shelf system in 1951. He is convinced that the Mushroom Growers' future prosperity depends on organized publicity, and is Chairman of the MGA Publicity Sub-Committee.

THE LATE Dr. W. M. WARE

We record with sadness the death in February, of Dr. W. M. Ware, the senior Life Honorary Member of the MGA. The Association was represented at his funeral by Mr. Basil Harding and we sent a wreath on behalf of all members.

William Melville Ware, D.Sc., was the author of the pre-War Ministry of Agriculture Bulletin 34 : " Mushroom Growing," and until his retirement shortly after the War was Advisory Mycologist at Wye College. He services to the Mushroom Industry were outstanding, and among his many publications on mushroom matters were those on *Verticillium malthousei*, Plaster Moulds, *Clitopilus cretatus* (with W. Buddin), and *Pseudobalsamia microspora* (with H. H. Glasscock).

As we wrote on the occasion of his election to Life Membership in 1948, Dr. Ware had a host of friends among mushroom growers, for he was always ready to give them all the considerable help of his long experience.

My own friendship dated from 1939, when he helped me in my early researches into *Verticillium*, and I shall always think of him with affection and gratitude. He was, indeed, a most charming and able man. F.C.A.

PUBLICITY WHERE IT COUNTS

One of the questions now being asked by members of the mushroom industry is " Just what is the Publicity Sub-Committee doing?" The answer, in no uncertain way, was given in the television programme "About the Home " on Thursday afternoon, 10th February, when that well-known television personality, Frances Perry, a great favourite with the viewing housewives, gave mushrooms a prominent place in her talk on fruit, growers, and vegetables, etc., in which each month she advises the housewife on shopping problems in this particular sphere.

For many months one of the important objects of the Publicity Sub-Committee, apart from its main function of raising the necessary finance, has been to ensure if possible that mushrooms were given a fair show on television, which has rapidly become by far the most telling publicity medium.

When the opportunity arose the matter was discussed by the Publicity Sub-Committee and immediate steps were taken to ensure that Frances Perry was given all the necessary facts and details in connection with her proposed feature on mushrooms. Wisely, Mr. Guy Reed, Chairman of the Publicity Sub-Committee, made a personal call on Mrs. Perry.

During the programme dealing with mushrooms Mrs. Perry first of all carefully explained the difference between Buttons, Cups and Flats and said that of these Buttons were usually the dearest, with Flats the cheapest. After saying that although some people might think that mushrooms at 2/6d. or so per ½ lb. were rather dear, Mrs. Perry said " Is that really so when mushrooms go such a very long way?" She went on to point out that mushrooms should be regarded as just as important as salt and cheese as a flavouring for all sorts of dishes, and at least in this respect could be very much more widely used than they were in many households to-day.

Dealing with the food value of the mushroom Mrs. Perry said that she was somewhat surprised to read in an old German newspaper that during the war mushrooms had been issued to U Boat commanders for the use of submarine crews. Mushrooms it appeared, made up for a deficiency in their diet and helped to prevent Scurvy and other ills. They contained essential health-giving vitamins. The French, she said, found that mushrooms were relatively rich in Folic Acid and were exceptionally good against hay fever, pernicious anaemia and so on, and were the equivalent in food value of raw liver, kidney and spinach. She underlined that she was not suggesting that mushrooms were to be eaten for these reasons alone but mostly because of their delicious flavour.

Arrangements were made for members of the MGA Publicity Sub-Committee who were meeting that day in Bedford Square, to see and hear Frances Perry give her welcome talk on mushrooms. Members noted with interest that Mrs. Perry is a great champion of market pre-packs for horticultural produce.

This television broadcast, most important to those engaged in mushroom production, was very welcome and served to demonstrate just what can be done if opportunities for publicity are quickly and intelligently taken. Innumerable such opportunities exist all the time. It only remains to have sufficient funds available to pay for them to be taken advantage of. The more funds contributed the more opportunities can be sought out or created and the more powerful the effect becomes.

MUSHROOM GROWING IN JAPAN

Mr. Kazuo Kinoshita, President of Messrs. Kinoshita & Co., of Ota-Ku, Tokyo, an export agency for Japanese mushrooms and allied products, writes to the MGA giving some information on mushroom growing in Japan.

He says:—" The Japanese mushroom industry is still lingering in the stage of embryo and will continue to remain so unless some drastic change in the situation is forthcoming. It was initiated in the late 20's by a few mushroom growing enthusiasts but production culminated in 1939, when, according to evidence which may not be too reliable, the export of canned mushrooms from Japan is stated to have reached a peak figure of 10,000 cases. In the writer's opinion however this figure has been somewhat exaggerated in view of the small acreage of bed space under spawning. Such a figure would certainly include the canned Matsutake fungus which is quite different from what you (of the MGA) would call a mushroom. The export was made primarily to China, Hong Kong and Singapore. During the war mushroom culture was entirely forsaken but, after the Armistice, growing was resumed again—about 1947. Production gradually increased and reached 100,000 lb. in 1953.

There are now, in Japan, some eight small growers—there are, in addition, several other midget farms—all of whom are spawning approximately 10,000 sq. ft. of bed space. The largest farm at present covers 25,000 sq. ft. The average yield in the first year of cultivation is estimated to be around 1.2 lb. per sq. ft., but this figure will fluctuate greatly from the second year onward due to unknown mould infection. Consequently, although the disinfection of premises would seem to be of the utmost importance, none of the growers seems to realise this dreadful fact sufficiently to do anything about it.

Cost of production is frightfully high in Japan. The majority of growers pay £4 per ton for horse manure while some have to pay as much as £8 per ton delivered.

After thoroughly examining some reports of Mr. Fred. Atkins on the cost breakdown of English mushroom production I have come to the conclusion that production costs in Japan are quite similar to those in England."

Mr. Kinoshita concludes by observing that, with such high costs in Japan, they may not be in a position to export dried or canned mushrooms to overseas markets and, he adds " I should imagine this will also be true of English mushroom growers."

THE FRED. ATKINS ALPHABET—P

(concluded)

Pinheads. The fruiting body in its first stage as such. Where there are masses of pinheads, particularly on trays, many are likely to die unless particular attention has been paid to watering and ventilating—and, perhaps, air movement.

Pleurotus passeckerianus. An earlier name for *Clitopilus cretatus*, the beautiful Cat's Ear Fungus.

Potassium. One of the essential minerals in the diet of the mushroom. Kligman tells us that potassium is almost completely absorbed from the digestive tract of the horse and so is excreted largely in the urine and scarcely at all in the droppings. Therefore a manure lacking in urine may be low in potassium and would probably benefit from the addition of sulphate or muriate of potash.

Potassium Permanganate. The addition of 1 lb. potassium permanganate to 2 pints formalin will release sufficient formaldehyde to sterilize 1,000 cubic feet of air space. I agree with the general opinion that the pot. perm. should be added to the formalin, and not *vice versa*.

Prices. The prices we pay have gone up steadily since the end of the War, and the prices we receive have gone down—though mercifully the curves appeared in 1954, to be levelling off.

Proisotoma minuta. A species of Springtail which eats spawn.

Protein in Manure. Again according to the invaluable Kligman Handbook, fully 30 to 40% of the solid material in horse droppings is made up of living bacteria, and the bodies of these bacteria contain protein.

Protein in Mushroom. From Massuchusetts comes the information that 100 grammes of fresh mushroom contains 2.67 grammes of protein. While this is as much as or more than in most vegetables, it is not comparable with the protein content of meat and to pretend otherwise is asking for ridicule.

Psalliota hortensis Cooke *var. alba.* This is the name I wish we could all agree to use for the bisporic white mushroom we cultivate.

Psalliotin. The name suggested by Nancy Atkinson for the antibiotic she extracted from mushrooms in Australia (see *MGA Bull.* 61).

Pseudobalsamia microspora. The dreaded false Truffle.

Pseudomonas tolaasi. Probably the principal bacterium in Bacterial Blotch disease.

Pyrethrum. A first-class fly killer which is probably incorporated in more of to-day's insecticides than we imagine. But the manufacturers keep very quiet about these things.

PUBLICITY POSITION TO DATE

OVER 80 PER CENT. RESPONSE to spawn contributions scheme reports one Spawn Distributor

When the Publicity Sub-Committee met at 45, Bedford Square, on Thursday, 10th February, for the usual monthly meeting of the MGA, the Secretary reported that two Spawn Makers Distributors who were operating the spawn contribution scheme had made their first contributions to the Publicity Fund. They were Mr. S. A. F. Sampson (Sinden Grain) of Oving, Chichester, Sussex and Messrs. Geo. Monro Ltd. (Sorbexas), Hertford Road, Waltham Cross. Mr. Sampson had stated that, as far as he was concerned, well over 80 per cent. of his customers had consented to make the publicity contribution levy of 1d. on each carton of spawn purchased. The committee considered this to be a most satisfactory start and a tribute to the way in which Mr. Sampson was operating the scheme. The Secretary added that contributions, in each of the cases mentioned, had been received in January. He further reported that, up to the time of the meeting, 22 firms of salesmen were supporting the fund, either by lump donations or on the basis of so much per chip handled. In addition four other firms connected with the industry had made donations and some others had intimated that it was their intention to do so.

The scheme in general was reviewed by the Committee Chairman, Mr. Guy Reed, who also reported on a meeting he had with the representatives of the National Federation of Fruit and Potato Trades Ltd., who had stated this MGA publicity effort in no way conflicted with their proposed scheme and was, in fact, complementary to it. It was pointed out that it might be some time before the Federation Scheme would be in actual operation.

Suggestions for increased publicity were received from various MGA members and these were discussed together with further plans for raising money. It was also decided that members should be circularised, in the near future, asking if they were contributing under the Spawn Contribution Scheme and to estimate, as near as possible, the total amount of spawn they were likely to use over a period of a complete year. In this way the Committee hope to be able to estimate, with some reliability, the amount of money likely to be available for Publicity and to thus lay firmer plans for the expenditure of such money.

Present at the meeting in addition to Mr. Reed were:—Capt. G. P. Lawrence (MGA Chairman), Mr. G. W. Baker (MGA Vice-Chairman) and Mr. Raymond Thompson.

I have been asked . . . . . *says* DR. R. L. EDWARDS

ABOUT PRESERVATIVES FOR WOOD

The traditional and best known preservative for wood is Creosote, which was almost universally used on the shelves and supports in mushroom houses until the last few years. Properly applied it has few superiors, and it is cheap. There are many kinds of creosote and it is advisable to ask for a high temperature distilled creosote complying with British Standard Specification No. 144.

The best way of treating wood is by pressure impregnation, but this is a factory job to be done before you buy the timber. By this process the preservative is forced well into the pores.

The next best thing is a hot and cold dip treatment. The timber is completely submerged in a bath of the hot preservative and is left there while it cools. The effect is similar, the air in the pores of the wood expands with the heat and contracts on cooling, drawing the preservative into the timber.

Penetration is not quite as good as by pressure treatment, but is better than by plain surface treatment by cold dipping, spraying, or brushing. These are quite satisfactory for a short time but the treatment must be renewed about every year or two for shelf boards, and after three or four years for supporting structures which do not come into contact with the compost. Creosote can be thinned with petrol for spraying or brushing to improve spreading and penetration, and accelerate drying.

Effect on mushroom crop

While only shelf beds were used there was no suggestion of injury to mushrooms by creosote. Indeed it was believed, and may well be true, that creosote tends to drive flies away. With the introduction of trays creosote came under suspicion as a cause of rosecomb and even total failure to crop. There were various possible causes, the most likely being a bad grade of creosote or the very much greater area of treated wood closer, to the beds particularly during peak-heating when the high temperature is most likely to cause fumes to arise from the creosote.

Later trouble occurred with shelf beds and it became clear that another important factor was the kind of timber. Before the war, mushroom beds could be made from well seasoned soft-wood which absorbed creosote well. After the war, unseasoned wood and often hard-wood was used, which did not absorb the preservative and allowed harmful fumes to be given off later.

Creosote should therefore not be used on trays, nor on unseasoned wood or hardwood for shelves. For well-seasoned softwood shelves it remains a satisfactory and the cheapest preservative.

There are various other important types of preservative, such as copper naphthenate under the proprietary name Cuprinol, one containing inorganic salts and dinitrophenol originally called Wolman's Salts and

now sold as Wolmanol or as Tanalised timber, and an entirely inorganic product, Celcure or Horticel. These can be applied in the same way as creosote, by pressure treatment, hot and cold dip, plain cold dip, spray or brush. The same considerations apply as for application of creosote.

Copper Naphthenate has been used for mushroom beds only to a small extent. It is a very effective preservative, and as far as I know has not been proved harmful to mushrooms, although small amounts of copper have been found in water dripping from treated bed boards. It is, however, essential to allow the treated timber to dry thoroughly before use, and the makers recommend 8 weeks for shelves and 12 weeks for trays. Both copper naphthenate and Wolman's salts have organic constituents which could give rise to fumes on heating. Celcure does not contain anything which can give off fumes and it is therefore safe in this respect. The treated timber should be allowed to dry before use.

There is a difference, not always appreciated, between treatment to preserve the timber of shelves or trays and disinfection between crops. The preservatives already mentioned prevent attack on the treated timber by fungi or insects. They do not kill any of these which may come into contact with the treated timber, and so do not prevent spores or insects lodged on the timber or in cracks in it, being carried over to infect the next crop. For this purpose the timber must be treated with a disinfectant which will kill any such spores or pests present on the wood at the time of treatment. Less persistent materials than the timber preservatives are normally used for this purpose, formalin or phenols such as cresylic acid. These only remain active on the timber for a relatively short time, until they dry off, and they have no effect on spores or pests deposited on the timber after that has happened.

By the way, when I mentioned Wolman's Salts in the January Bulletin (p. 458), I was confusing Wolman's Salts and materials based on the formula with Celcure, which is not in fact so based. It is Celcure which contains no organic material and was intended to be mentioned there.

SMALL ADVERTISEMENTS (3d. a word)

Nr. TUNBRIDGE WELLS, KENT. First class purpose built mushroom farm, providing 20,000 sq. ft. of beds with all necessary ancillary buildings. Very pleasant well-maintained 4 bedroomed residence. Main electricity, water and drainage connected. Freehold £10,000. Inspected and recommended. Gladding, Son & Wing, F.R.I.C.S., 14a Ship Street, Brighton 1. Tel. Brighton 23284.

POROUS CHALK is a first-class natural regulator of moisture. Mushroom Chalk dug from deep down is supplied by Coopers, Limeburners, Canterbury.

MUSHROOM FARM WANTED, or partnership in existing farm where capital could be used for expansion or improvement. Reply Box No. 3.

OPPORTUNITY for young man liking hard work, to become partner in Mushroom Farm and nine acres. Reply Box No. 4.

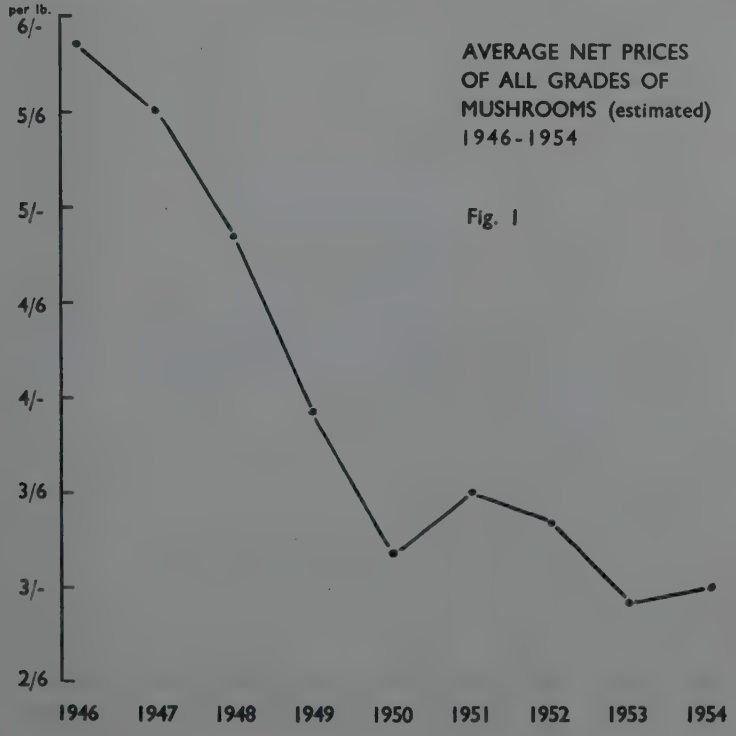
(Continued on inside back cover)

PRICE TRENDS

Reviewed by FRED. ATKINS

When we work out each year what our average price was for mushrooms, I assume we divide the number of pounds of mushrooms we sold into the sum of the cheques we received from our wholesalers (who have previously deducted commission). Some growers who send to the more particular markets, such as Covent Garden, include the number of pounds of stalks or stems they sell, and this goes part of the way towards explaining why average net prices in 1954, varied between 2/6d. and 3/6d. lb. The rest of the explanation is found in two directions: Some growers, for reasons not fully understood, produce a better quality mushroom than others, and some markets at some times of the year are better than other markets.

It would be extremely interesting if a widespread organisation such as Francis Nicholls would tell us whether the average price for all grades of mushroom was higher in Birmingham, for example, than in Leicester—but obviously it would not be good policy for them to do so.



AVERAGE NET PRICES OF ALL GRADES OF MUSHROOMS (estimated) 1946-1954

Fig. 1

In the absence of comprehensive data, therefore, I have been asked to estimate, from what figures I do possess, the present trend in prices. I believe I am not far out in this graph of average annual net prices for all grades since the war (not including stalks sold separately).

The steep fall since the inflated war years began to level off in 1951, and for some of us at any rate the price last year was a penny better than in 1953. *It might be conjectured that we are not likely to average less than, say, 2/9d. lb.:* but there are too many outside factors over which we have no control, such as imports, intensive advertising of other commodities competing for the housewife's purse, the national economy and the international situation, not to mention the steady increase in our total output.

Perhaps we shall one day decide to keep stalks and seconds off the market by processing them co-operatively. I like to think we shall, and keep a graph of best quality sales which gives a happier picture, false though it is! No doubt we all of us know this pattern; I give it only on insistence from Editor Alderton, who thinks it would at any rate provide an interesting record for posterity.

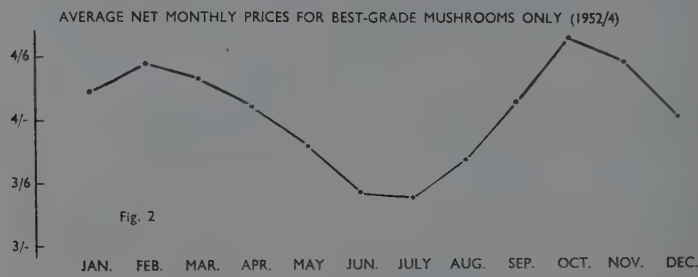


Fig. 2

When I was Bulletin Editor we had several requests for a monthly market report. I could never think it would have any value. If such figures as those which the Ministry of Agriculture publishes weekly were of any value to me I would abstract them from one of the weekly trade journals rather than wait for the monthly Bulletin. But does it really help to know that some people appear to think we get better prices than we do in fact? What we need more urgently, in my opinion, are (*a*) publicity to stabilize prices around the present level (which I suggest is about 3/- lb. net) and (*b*) an all-out effort to increase our efficiency and thereby reduce our costs.

It does not appear inconceivable that, one day, national mushroom research will be resumed. **The next stage must surely be the field experiment stations** envisaged by the Ministry as far back as 1946, in the early days of the NAAS. How better could we set about reducing costs?

Back on my hobby horse? Well, we can't control prices; we *ought* to be able to control our production. We can't to-day. It used to be fun visiting mushroom growers. It still is, but the talk is overwhelmed by present anxieties where 10 years ago it was bright and sparkling with hope for the future. Sorry to digress . . . . . .

FINANCE *and* MUSHROOM HOLDINGS

By " SERVICUS "

It is proposed to review in this memorandum the exact position as to the finance available on a long term basis for mushroom holdings, to consider the reasons for this, and then the effect that this must have upon the members, and finally to outline various proposals as to what might be done to improve the position in the interests of the members of the Association.

The Present Position

There is no money available for the long term finance of mushroom holdings based on the security of the holding itself. The following organisations have been approached :—The Agricultural Mortgage Corporation, all the Banks normally having dealings with agriculture, two Hire Purchase Companies, one industrial finance house, five Life Assurance Companies, three of whom also operate Insurance, some 20 Solicitors, four stock brokers and one discount house.

The reasons for this lack of support would appear to be as follows: a certain facetiousness in the replies indicates that the size and importance of the Industry is not appreciated, and that the word " mushroom " has an unfortunate association in the minds of the men of the financial world, and I gather that such an association is not without at least one incident within the memory of many of the men concerned.

It is said that the market in mushroom holdings is weak and that, therefore, a mushroom holding is a bad security, as in the event of a fore-closure the lender might be unable to do anything with it. It is said that the heating equipment, layout and so on is a highly technical matter, the appraisal of which would require specialised advice, and therefore there are certain practical difficulties for the lender, as he would not know who to appoint to value the holding.

As with all agriculture the results depend upon the skill of the individual growers, but it is said that with mushrooms this is even more the case, as it is harder for an applicant to produce satisfactory evidence of his skill and ability to grow mushrooms profitably.

It seems clear that the value of a mushroom holding is dependent upon the skill of its grower and that, therefore, it is necessary to have a means of establishing whether growers who wish to borrow have the necessary ability and skill, and whether their holdings are satisfactorily laid out and equipped.

This in itself will not give the holdings a satisfactory realisation value unless there exists a small reserve of men who are anxious to become growers. The lack of finance must reduce the number of people who can become growers, and thus reduce the realisable value of the holdings.

The conclusion is, therefore, that if the Association improves the creditworthiness of the mushroom grower and his holding the Association

will automatically increase the realisation values of the holdings to every member of the Association, and as everyone sooner or later must grow old, it seems to me that this matter of finance directly affects every member of the Association or their widows or heirs.

Proposals

The first proposal has already been put into effect for the use of the Credit Service Unit, of the National Farmers' Union Development Co. Ltd., following upon recommendations by the Association a well-known research worker and grower has been approached and he has consented to act in a technical and advisory capacity as a lenders' referee.

This technical and advisory referee is prepared to " visit mushroom farms as lenders' referee, and to report on the layout, buildings, and equipment, past cropping records, crops in progress, and degree of competence of the growers as far as I can judge it."

It would seem desirable to consider whether a supply of potential growers should be stimulated and whether in order to ensure that they had the necessary skill some formal apprenticeship scheme might not be started, and in conjunction with this possibly a diploma issued.

It might be considered whether the Association should establish a Register of Holdings available and growers desiring holdings, with a view to improving marketability of the holdings. Further it might be considered whether the Association might sponsor a Manager Membership in some associate form, together with an employment register, thus increasing marketability of holdings by enabling unskilled persons to purchase and operate their holdings through managers.

Finally, and perhaps the most important proposal of the whole lot, to take steps to ensure that finance is available.

The writer understands that if the industry through the Mushroom Growers' Association came to the conclusion that availability of finance was in the long term interests of the industry and provided a certain amount of money was raised for the purpose within the industry itself, the Credit Service Officer of the N.F.U. Development Co. Ltd., might be in a position to raise the additional finance required.

Spawn—to Order

"Polish Foreign Trade," a luxury publication from Warsaw, gives details of a laboratory which produces spawn to the customer's special order.

Mr. T. Bukowski, B.Sc., an Honorary Member of the MGA, asked about this service, has replied: "Our mushroom spawn laboratory offers Polish customers spawn from specimen mushrooms sent to our laboratory in the button stage with veil unbroken. The parent mushroom is surface sterilized for three minutes in a solution of bichloride of mercury diluted with water 1-1000. A piece of the cap is then broken and small pieces of the gills are transferred on malt agar slopes. Repeated transferring under aseptic conditions is limited to three generations in test tubes and two generations in bottles."

2 ESSENTIALS FOR GOOD CROPS

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in strains
to suit all conditions

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SPHAGNUM PEAT

(with lump chalk) for CASING

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AN AMERICAN GROWER'S DIARY

By JOSEPH M. MICHAELS, Naperville, Illinois

20th January, 1955

The top beds in two of our houses which always developed truffle when the temperature gets up have come thru without any appearance of truffle after two months of cropping. Yet during spawn run this year the temperature was abnormally high—eighty degrees for several days. The bed boards were sprayed with ammonia a day before the houses were filled. Knowing that truffle is whimsical in its appearance and may not appear even when the grower thinks that conditions are most favourable, and being too busy to conduct an experiment scientifically, I however, like to think that the ammonia spray did the trick. Here is my theory (perhaps not worth anything). I believe that the ammonia on the bedboards produces an alkaline buffer between the bed-boards laden with truffle spores and the compost. Truffle spores will not germinate in an alkaline medium, regardless of the temperature.

I would like to suggest that calcium propionate might be used in mushroom houses as a prophylactic fungicide. The propionates are used by the bakery trades to inhibit the various bread molds (that is the way we spell ' moulds ') and that is the reason that bread does not get moldy in a few days, like it did a few years back. I have a hunch from a few experiments (carelessly conducted as is usual with mushroom growers) that calcium propionate is selective and specific for the fungus enemies on the mushroom bed, but does not affect the mushroom. Calcium propionate is instantly water soluble, and could be watered in when the beds are sprinkled. I am wondering if some of our eminent researchers like Dr. Sinden, Dr. Edwards, Dr. Stoller, or Dr. Kligman and others have not already explored the propionates as selective fungicides and fungistats. It is interesting to note that calcium propionate as used by the bakers is recognized by the Pure Foods and Drugs Administrations as harmless and non-toxic. How wonderful it would be to evolve such a safe fungicide for the mushroom industry. We'll be glad to say goodbye to the carbamates, and the more harmful chemicals.

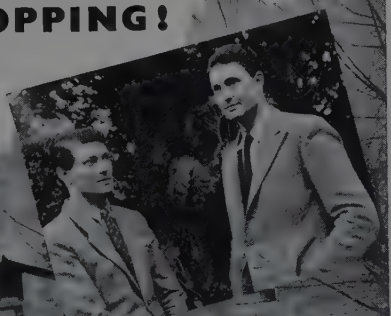
I do not think, however, that propionates or carbamates or any other fungicides will become a panacea for all the ills of a mushroom house. Of course, we know that *Mycogone*, for example, can be controlled completely with a carbamate (zineb). But I cannot overlook biological control. To dismiss biological control would be to dismiss from our vocabulary such words like ' immunity,' etc. To cite a well-known occurrence in a mushroom house, allow me to interrogate thus: why will *Mycogone* attack the mushroom mycelium in the casing soil, yet *Mycogone* will not attack the same mushroom mycelium in the compost?

25th January, 1955

M. H. Pinkerton's " Commercial Mushroom Growing " has been received and read by several growers here. I would like to summarize the various impressions about this recent book.

THE PROOF OF THE SPAWN— IS IN THE CROPPING!

Messrs. R. H. & R. S. Fryer, and below, a view of their farm at Chesham.



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You may be interested to learn that in a current crop on shelves we have just picked 2 lbs per sq. ft. in 3 weeks 4 days. The third flush is still producing and it seems likely that by the end of this flush the crop will have a minimum 21 lbs in a day or two over four weeks

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(*a*) The chapter on tray culture is particularly disappointing; probably because it was publicised as the highlight of this book. Tray culture is a fascinating subject, and has been done so much better by Sinden and Atkins and in the Manuals published by two of the spawn makers in this country.

(*b*) The Chapters on manures and composting are especially well done. The formulas for ' Synthetics ' and the treatment of Synthetic compost by the author seems adequate. The group that discussed this book here to-night does not agree with Pinkerton on page 73, and his paragraphs entitled: " How to know when the compost is ready."

(*c*) The work on Diseases and Insect Pests is fragmentary, and a rehash of work that has appeared in nearly every mushroom manual that has ever been published.

(*d*) Pinkerton says in his preface that the aim of the book was to ' deal with every aspect of mushroom growing as simply and as briefly as possible.' Well meaning as this aim is, we feel that he has compromised with thoroughness. In this respect his book is very second-rate as compared to Kligman's ' Handbook of Mushroom Culture.'

(*e*) The conspicuous absence of references to recent literature and work in the bibliography is a shortcoming of a book entitled ' Commercial Mushroom Culture.' The name of Dr. B. B. Stoller deserves mention in the bibliography. His contributions to commercial mushroom culture are tremendous. It is difficult to see how he could be omitted.

CALLING THE MUSHROOM INDUSTRY!

PUBLICITY

Both the Executive Committee and the Publicity Sub-Committee gratefully acknowledge contributions to the **Publicity Fund** from the following:—

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MORE PUBLICITY FUND CONTRIBUTIONS

The Publicity Sub-Committee take pleasure in calling the attention of members to the following contributions to the Publicity Fund, received up to 19th February, 1955. For obvious reasons the contributions of the two spawn merchants, from whom contributions have so far been received, cannot be divulged.

	£	s.	d.
Brantom, Shirley & Co. Ltd., Vicarage Wharf, Battersea, S.W.11 (Activators)	25	0	0
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Fred. Hall & Sons Ltd., Station St., Middlesbro' (Salesman)	2	5	0
Geo. Jackson & Co. Ltd., Smithf'd Mkt., B'mg'm 5 (Salesmen)	5	5	0
J. Jones & Sons, North Market, Liverpool 3 (Salesman)	5	5	0
J. W. Laws, Green Market, Newcastle-on-Tyne (Salesman)	2	0	0
James Mager & W. R. Cornall	2	0	0
Geo. Monro Ltd., Hertford Road, Waltham Cross (Spawn-Sundriesman)	0	0	0
S. A. F. Sampson, Oving, Chichester, Sussex (Spawn Merchant)	0	0	0
C. Snowden & Co. Ltd., Castlefolds Mkt., Sheffield (Salesman)	2	12	9
*Stable Manures Ltd., Lancing, Sussex and Newmarket (Stable manure)	57	17	4
Dan Wuille & Co. Ltd., Covent Garden, W.C.2 (Salesman)	50	0	0

*Second Contributions

DOWN TO EARTH—3

By Dr. R. L. Edwards

Casing Materials

The first very positive statement on this subject is that a satisfactory casing is essential if a worth-while crop is to be produced. The second, rather less clear-cut and perhaps more debatable, is that the nature of the casing material required depends on the other growing conditions, i.e., kind of bed and particularly air conditions.

The traditional casing material is natural soil. For normal houses a fairly heavy soil is preferable, or one rich enough in humus to hold moisture well; very light sandy soils dry out too quickly. Although soil texture in this way is a rough preliminary guide to suitability it is not conclusive, and occasionally soils are found which seem quite usable, but which refuse to give a crop of mushrooms. It is therefore advisable to try a new soil on a small area of bed before casing whole crops with it.

Casing soil is one of the most likely sources of disease, and must either be free from disease spores, usually because it comes from the subsoil undisturbed by cultivation, or it must be sterilised. In digging subsoil the top 18 inches of soil is usually discarded, and great care is necessary to avoid accidental infection of the subsoil between digging and use.

Sterilization is usually done by steaming, but formalin can be used. Steaming is particularly effective against *Mycogone*. There is a Ministry of Agriculture Bulletin on Soil Sterilization which gives full working directions. Naturally after sterilization re-infection must be prevented. In fact if disease does get into sterilized soil it finds less competition than in untreated soil and it often runs riot.

If there is only a slight natural infection, serious damage to crops may be prevented by systematic use of the selective fungicide zineb. This should be dusted on the beds two to three times a week from casing to the appearance of the first flush and may also be applied between flushes, at $\frac{3}{4}$ lb. per 1,000 sq. ft.

Casing soil should have a pH between 7.5 and 8.0. The necessary adjustment can be made with lime, preferably carbonate.

Artificial Casing Mixtures

During the last few years artificial casing materials based on peat have come into use. The most popular are:—

1. Plain peat, either sphagnum or sedge.
2. Sphagnum peat mixed with lump chalk in equal parts by volume; the chalk should be graded $\frac{1}{2}$ inch downwards.
3. Sphagnum peat mixed with sharp sand, not more than half sand by volume.
4. Sphagnum peat mixed with Vermiculite.

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Signed W. A. B. HARDING,
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If the lump chalk contains a reasonable proportion of fine particles it neutralises the acidity of the peat, but in other cases carbonate of lime should be added to bring the pH over 7.5. This may be powdered chalk or ground limestone but should not be magnesium limestone.

These artificial casings should be thicker than soil on the bed, up to two inches under dry air conditions. Plain sphagnum peat should have about half a gallon of water per pound added to it and should be allowed a day or more to absorb this before using it. They need rather more watering than soil.

There is probably not much to choose between these four materials in cropping capacity, but the difference between good and bad management can have a big effect. It is therefore wisest to choose one casing, stick to it, and learn how to manage it to obtain the best results.

MY WAY OF GROWING

18—W. J. GOWLAND, Burton Leonard, Harrogate

As I have been asked to contribute to the series, " My Way of Growing," I will do my best to give an understandable outline of the methods we use.

After studying various books on the growing of mushrooms for about a year, and gathering from many sources every available scrap of information about this difficult art, my wife and I decided to try one stone building, with about 1,000 sq. ft. of 3 ft. × 2 ft. × 6 inch deep trays, each with 12 inch long corner post for better air circulation; also by using these, one can see which mushrooms are ready without bobbing up and down to look in each individual cavity. We have now changed to 2 ft. × 2 ft. trays as we find them much easier to handle.

We do not use any preservatives, finding it better to replace when necessary. Each time a house is emptied, the trays are washed and dipped in formalin, which we have found quite satisfactory.

We have done quite a lot of experimenting, including shallow trays, German, Dutch and other methods of growing, which do not appear to be any better, if as good as our own. We have also tried growing on poultry manure (deep litter); the only disadvantage would seem to be its weight. Compost is now made from racing stable manure.

We are now using fresh, wet brewers' grains alone as an activator, adding approximately two bushels per ton of manure when stacked, the first turn being given on the 6th day, adding 28 lb. of pink gypsum at the second and last turn on the 12th day. The trays are filled on the 18th day.

We do not as yet pasteurise. We have had negligible trouble with disease or insects so far. Each building is dusted with Gammexane only if any insects are visible.

The beds are spawned with Scottish grain immediately after filling, using one carton to 36 sq. ft. After trying many types of casing material, we are now using North German peat, pH 4.5 (not sterilised), adding about $5\frac{1}{2}$ lb. of damp carbonate of lime per bushel of peat (dry). The beds are cased after 14 days, using approximately 2 lb. of really wet peat and lime (roughly 1" deep) per sq. ft. We try to maintain a spawning temperature of 70 degrees, and a cropping temperature of 60 degrees. Cropping is carried over a period of 12 weeks, taking three crops per year, the average yield per crop being $1\frac{1}{4}$ lb. per sq. ft. or to 11 lb. of manure.

Like other growers we are still hoping to increase the yield. We are now using top ventilation only, with the fan operating as a blower. We have a circulating fan driving air through a duct, outlets being into each bay. Each fresh building (we hope) is an improvement on the last one. There would seem to be no end to the alterations one can make, for possibly better or worse growing conditions, one day fitting a new ventilator, and the next week moving to a new position, and roughly filling up the hole which earlier one made so carefully.

Who knows, perhaps one day we may find the ideal; then I suppose one will lose all interest in growing mushrooms.

However, here's wishing every success to the MGA, not forgetting the long suffering grower of mushrooms.

CORRESPONDENCE

Sir,

In the June Bulletin No. 54, your article on Folic Acid prompts me to drop a short note.

In my seafaring days, when any reading material was eagerly sought, I remember an article on " Folic Acid " making a very lasting impression on me. So much so, that I take it as a duty to pen this note to you.

Your only reference is " The Lancet." The article I refer to appeared in one of the " Digest " publications. The actual volume or date I regret I cannot recall.

However, at a very rough guess, I would say an American " Readers Digest " of about five years ago. I earnestly suggest you try and obtain the information through the publishers. A re-write would do mushrooms a million pounds of good.

Yours faithfully,

T. GAW.

RESEARCH IN FRANCE

We hear with pleasure that the French Growers' Federation has bought a small cave at Montessan where they propose to centralise their research and experimental work.

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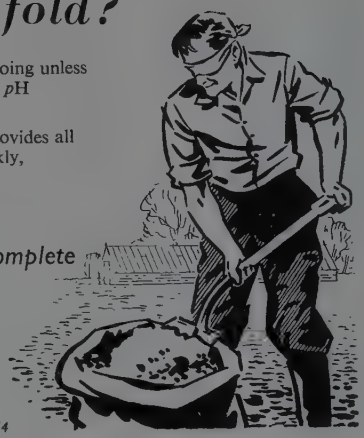

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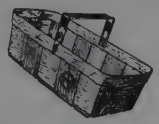

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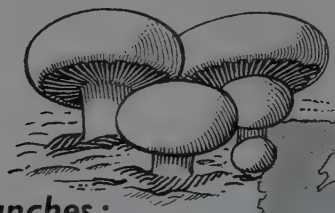

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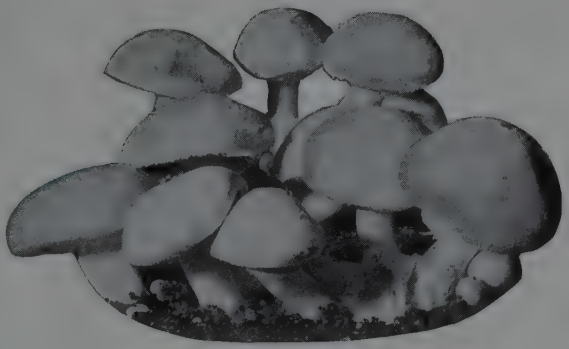
To **ALL MUSHROOM GROWERS**



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★ Buy from the only organised firm of its kind in the country

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HAVE YOU TRIED OUR LOWER PRICED ACTIVATORS YET?

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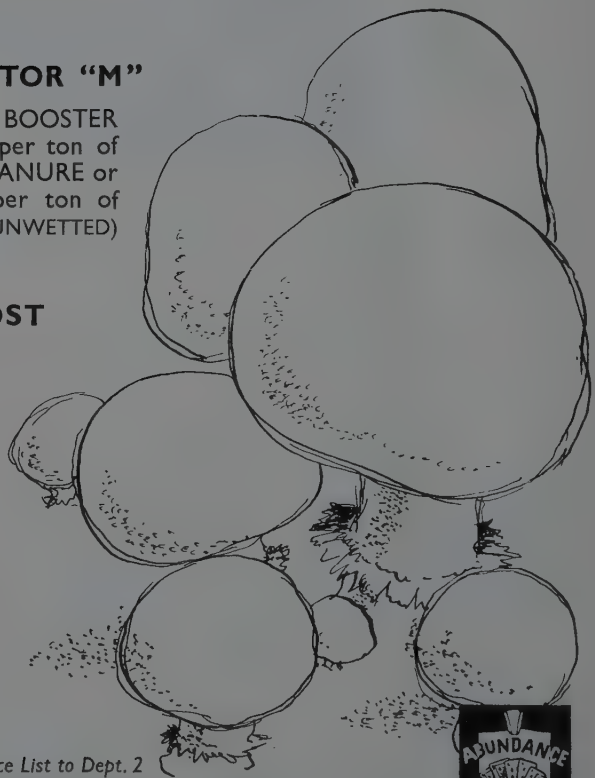

ACTIVATOR "M"

Our No. 1 BOOSTER 20/28 lbs. per ton of STABLE MANURE or 3½ cwts. per ton of STRAW (UNWETTED)

99·9 COMPOST MAKER

Our No. 2 BOOSTER 28/56 lbs. per ton of STABLE MANURE

BOTH CONTAINING TRACE ELEMENTS

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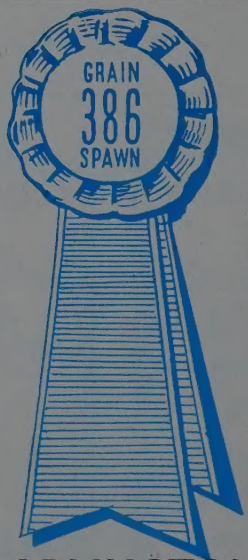

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SMALL ADVERTISEMENTS—(*continued from page 520*)

PURE DRIED GROUND POULTRY MANURE. This pure, natural organic is regularly used by prominent mushroom growing firms. It represents an invaluable *organic* activator for stable manure. Finely and evenly ground, it is convenient and clean to handle and being packed in ½ cwt. sacks, the weight you receive is *guaranteed.* Sample and prices (which vary according to the distance for carriage from our Works) on application. Sole Producers:—THE HAMPSHIRE GUANO CO. LTD., SOBERTON, SOUTHAMPTON. (Estd. 1937). Manufacturers of "Gunos" (Regd.) Brand Fertilisers.

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CHIP BASKETS, PACKAGES AND ALL PAPERS. At competitive prices.

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PLASTIC HOSE. ½" 5½d. ft., ⅝" 8½d. ft., ¾" 9½d. ft., 1" 1/3¾d. ft. 60 ft. lengths and multiples.

TRAYS. New in all designs from 4/- wired ends. Used fish trays from 1/11d. Quotations by road or rail. **J. E. R. SIMONS LIMITED, HARLOW, ESSEX. 'Phone: Potter Street 65. Telegrams: Simons, Harlow.**

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GYPSUM direct from Gypsum Mines 1 cwt. 6/6d., 5 cwts. 6/- cwt., 10 cwts. 5/6d. cwt., 1 to 5 tons £4 a ton, 6 tons £3 15s. 0d. ton. Carriage extra by road or rail at cost.

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Published by the Mushroom Growers' Association, 45 Bedford Square, London, W.C.1
and printed by W. S. Maney & Son Ltd., Russell Street, Leeds 1